Update on the Papaya Ringspot Virus Situation in Puna

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I would like to start on a good note and tell you that PRV has been eradicated in Puna. Unfortunately this is not the case, but, nevertheless, we have made great progress in reducing the incidence of PRV in Puna. PRV was discovered a year ago, in May, affecting several thousands of papaya plants at the Pahoa orchards. Some felt that it was the kiss of death for the industry, in that the infestation had been present for six months or more, judging by the symptoms being expressed at that time. Although the number of diseased plants destroyed monthly has drastically declined, we are not out of the woods yet.

Symptoms

Before I give an update of the Puna situation, let's review the symptoms of PRV. Although this has been done many times before, I'm sure there are some in the audience who are not familiar with the symptoms.

The most striking symptom of PRV is the chlorotic mottling of the leaves. Early symptoms, however, are difficult to detect, requiring a trained eye. Dark green streaking patterns also occur on the leaf petioles. The most damaging aspect of this disease, however, is what it does to the fruits. PRV results in low fruit quality, stunted, misshapen fruits, and ring patterns. Such fruits do not meet fresh fruit grading standards.

In terms of economics, the Big Island has over 2,000 acres in papaya production, or about 93 percent of the state's total papaya production acreage. The farm value of fresh papaya production on the Big Island is $16.2 million, or 95 percent of the state's total of $17 million

The following quote by Dr. Stephen Ferreira, Extension Specialist in Plant Pathology, emphasizes the reality of how critical the PRV situation in Puna is: "In Hawaii, and elsewhere in the world, (PRV) has become a major production constraint whenever it occurs on papaya. Once introduced into an area, if drastic eradication measures are not implemented, it is only a matter of time before commercial production is no longer viable, generally in about five years."

Chronology

To refresh your memories on the events of last year to present, let's go back and look at a chronology of events starting from May of 1992. May 5 is when the disease was discovered in Pahoa, after Loren Mochida of Tropical Hawaiian Products presented Wayne Shishido of the Hawaii Department of Agriculture (HDOA) with an infected plant sample. The following day almost 600 plants were tagged by our crew as being diseased. We then destroyed the diseased and suspect plants with consent from the farmers. It was on May 14 and 20 that meetings were held with the Papaya Administrative Committee (PAC), papaya industry people, the University, and the HDOA regarding the Pahoa situation. It was decided that the HDOA should pursue the enactment of a temporary 180-day emergency rule declaring PRV a pest for eradication, which would grant us certain powers provided by the statutes.

On June 18, the emergency rule was approved by the Board of Agriculture, and then approved by the Governor on June 25. With this rule, consent from the farmer and land owner was not necessary – we could go on to private property to implement eradication procedures after giving proper notification. A few weeks later, PRV was found in the Nanawale fields, and then in the Kahuwai fields. Once again at Kahuwai, the infestation was determined to be several months old, judging from the symptoms being expressed.

The emergency rule gave the department the authority to enter private property to take the steps necessary to eradicate PRV. However, those steps needed to be worked out with the growers and industry personnel. If you recall, the University's plan back in May 1992 to destroy all papaya plants in Pahoa was unacceptable. They also proposed that as much as a 60-foot radius rogueing procedure be implemented to eradicate in other areas. Actually, the University's proposal made a lot of sense, since there is no predictable pattern of the disease's spread, and that there are currently no reliable methods to determine if a plant has a latent infection.

At a meeting on July 29 between the department, UH, papaya industry, and a farmer

representative, a more conservative two-step rogueing procedure was developed, which I'll detail later.

The disease continued to be found in different areas in Puna: August 5 at Kapoho, November 23 at Geothermal, and December 15 at Opihikao.

Because the duration of the emergency rule could not exceed 180 days (expiring on December 21), the department initiated permanent rule making procedures, with the board granting approval to proceed with public hearings, which were held in April of this year, concluding with the Governor approving the permanent rules on August 25.

In the meantime there were more outbreaks of PRV in the Chow Ranch area.

The two-step rogueing procedure developed at the meeting on July 29 involved the removal of the diseased plant along with the four adjacent plants. Procedure A (Fig. 1) was implemented in an orchard for a period of three weeks. If the disease prevailed after three weeks, Procedure B (Fig. 2) was implemented until the disease was eradicated from the orchard. Procedure B involved the removal of all plants within a 30-foot radius of a diseased plant.

The result of the implementation of the eradication program is shown in Figure 3, a drastic decline in the number of diseased plants taken down, from over a thousand in May to a low point in November and December. The current number of plants taken down monthly (50–100 plants) represents more than a 90 percent reduction from the original levels of last year.

As I mentioned before, the emergency rule was a temporary one. After it expired in December, most of the growers opted to not allow the continuation of the 30-foot rogueing radius, but only allow the X-pattern rogueing, or only allow the removal of diseased plants. However, we have been fortunate in that the disease has remained at a fairly low level in the months following the expiration of the rule.

The HDOA now has permanent rules in place and will be once again meeting with growers and papaya industry people to determine the course of action we will take. We hope to once again restore Puna's disease-free status.

Lastly, I would like to acknowledge six of the most hard-working people on our staff. They were instrumental in bringing an out-of-control disease situation to the levels that we see today: Wayne Shishido, Kyle Onuma, Paul Texeira, Randall Ioane, Steven Camara, and George Espaniola. They are here today to listen in on the meeting, but they will be back out in the fields next week.

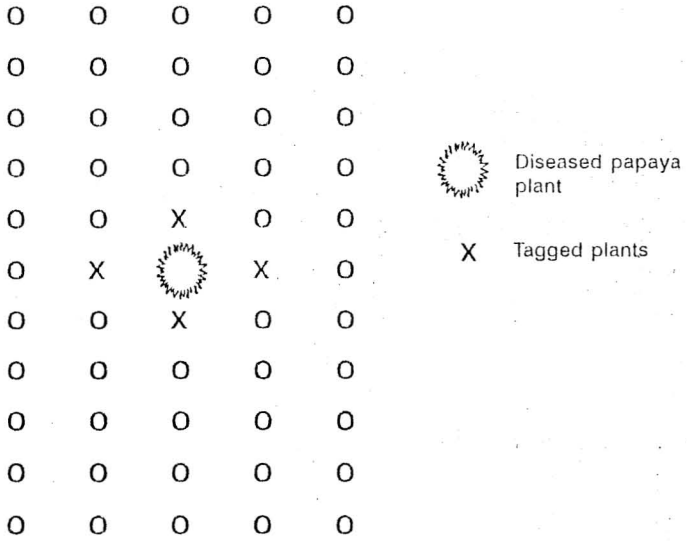

Figure 1. Procedure A.

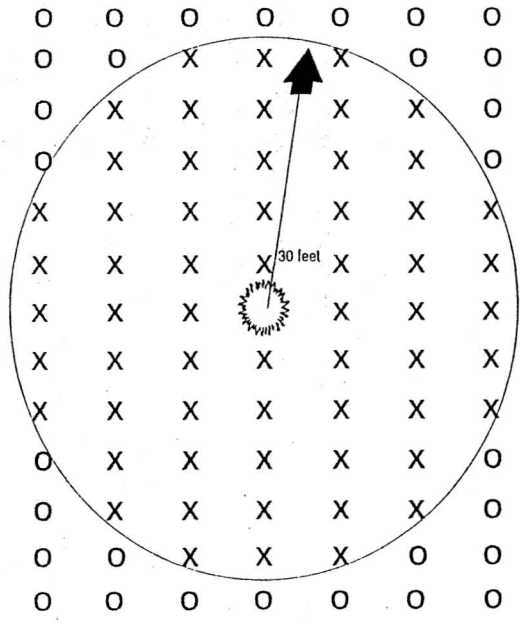

Figure 2. Procedure B.

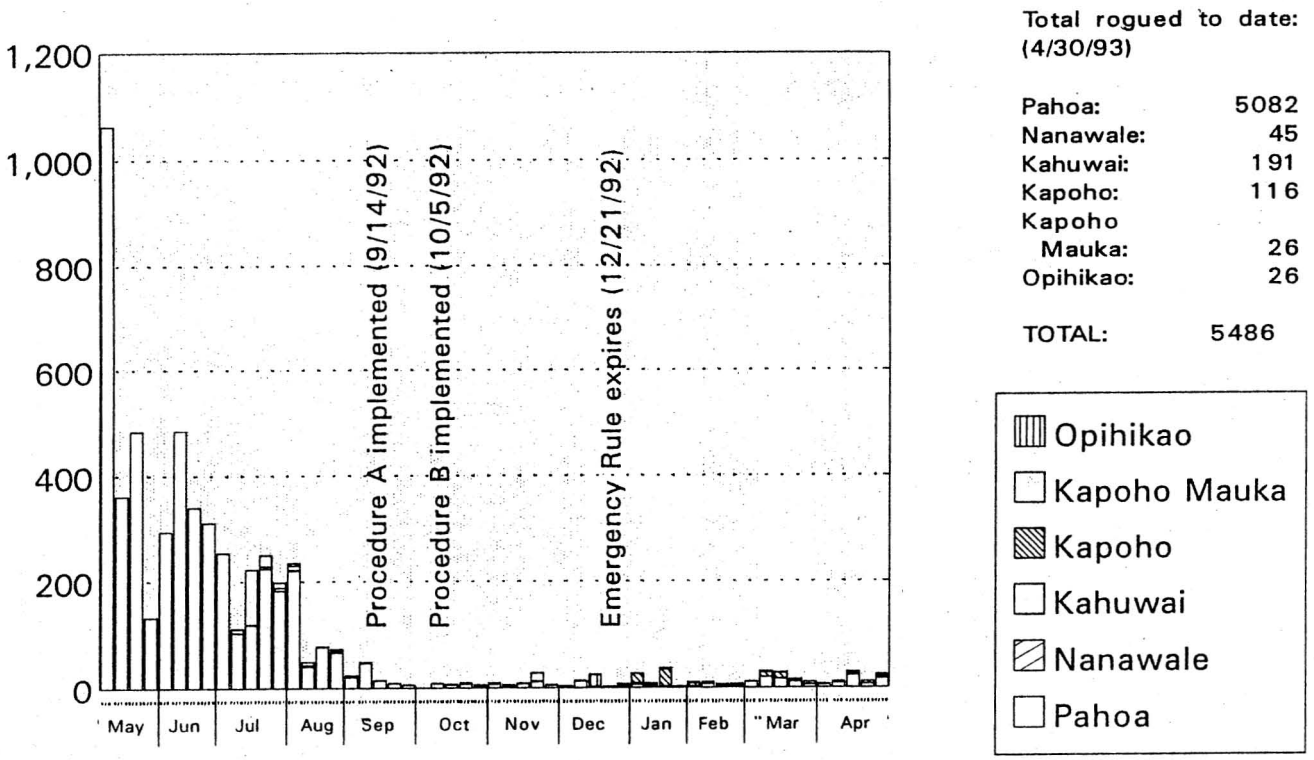

Figure 3. Number of PRV-infected plants rogued in Lower Puna, 5/92–4/93.